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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,832	12/17/2003	Hee-Kwan Son	8947-000063/US	5440
30593 7590 06/11/2008 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195				
EXAMINER				
NGO, CHUONG D				
ART UNIT		PAPER NUMBER		
2193				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/736,832

Applicant(s)

SON, HEE-KWAN

Examiner

Chuong D. Ngo

Art Unit

2193

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) 1-7, 42-50 and 56-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-41 and 51-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 02/14/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 20 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 20 and 22, the limitation of “full compressor” and “reduced compressor” are unclear. For the purpose of examination, the limitations “full” and “reduced” are not considered.

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 8-41 and 51-55 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 8-41 and 51-55 are directed to an inventions that merely perform calculations and manipulations of data. In order for such a claimed invention to be statutory, the claimed invention must accomplish a practical application. That is the claimed invention must transform an article or physical object to a different state or thing, or produce a useful, concrete and tangible result. See *State Street*, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. Also see “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility”, OG Notices: 22 November 2005. It is clear from the claims that the invention merely performs calculations and manipulations of data. The claimed invention does perform any physical

transformation. The inputs are numbers and the output is also a number. Further, the result of the invention is a mere numerical value without a practical application recited in the claims to make it a real world result. Therefore, the result is not useful, concrete and tangible. Thus, the claimed inventions are directed to non-statutory subject matter as the claimed inventions fail to accomplish a practical application. Further, since the claims appear to cover every substantial practical application, they are also directed to a preemption of the claimed manipulation and calculation of data.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8-17,23,27 and 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. ("New VLSI Architectures of RSA Public-Key Cryptosystem")

As per claim 8-10, Wang et al discloses in figure 5 an accumulator including a carry save adder inherently having plurality of compressors (each compressor corresponding to a bit slice of the carry save adder for processing bits at a corresponding significant bit position) for operating in a carry save mode, each of the plurality of compressors receiving a multiple modulus (a multiple of N from MUXs), a partial product (a multiple of B from MUXs) , a corresponding current sum and a corresponding current carry (the feedback from the carry save adder), and producing a corresponding next sum and a corresponding next carry (the output from

the carry save adder). It is noted that Wang et al does not specifically disclose a sum register and a carry register as claimed. However, since Wang et al. discloses the accumulator in figure 5 in an iterative and pipelined structure, and in order to enable a pipelined process, it would have been obvious to provide the accumulator with pipeline registers for receiving the carry and sum outputted from the carry save adder and feed them back to the carry save adder as corresponding updated current carry and sum as claimed.

As per claims 11-17 and 23 since Wang et al discloses in figure 5 the accumulator also accumulating Booth partial product, it would have been obvious to a person of ordinary skill in the art to have the number of compressor, the bit length of the multiplicand, and the bit length of the multiplier as claimed.

As per claim 27 and 51-53 it would have been obvious to provide the accumulator of Wang et al with a carry propagate adder in order to convert the final carry and sum to a normal number.

As per claims 54, at least the signals to the MUXs are the switching signal.

6. Claims 19-22,25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. ("New VLSI Architectures of RSA Public-Key Cryptosystem") as applied to the claims above, and further in view of Peh et al (5,796,645).

As per claims 19-22, it is noted that Wang et al does not disclose a compensating word to be added in the accumulation as claimed. However, Peh et al. discloses in col. 4, lines 29-60, an addition of compensating word (the "binary 1", lines 52 and 57) for reducing the time that is required to perform two's complements of Booth partial products by not directly computing the

two complements. Thus, it would have been obvious to a person of ordinary skill in the art to provide employ a compensating word in the accumulations in order to reduce the processing time.

As per claim 25, it would have been obvious to use three full adder in a compressor that involves the compensating word in order to compress 5 input bits.

As per claim 26, it would have been obvious to use a half adder and two full adder in a compressor that does not involve compensating word since it only compresses 4 input bits.

7. Applicant's arguments filed 02/13/2008 have been fully considered but they are not persuasive.

Regarding the rejection under 35 U.S.C. 112, it is respectfully submitted that a "full compress" as defined by applicant in the remark is no more than a compressor. In addition, without further description, one of ordinary skill in the art would not understand that a "reduce compressor" would have a meaning as defined in applicant's remarks. Especially, "the third number is larger than the second number". .

Regarding the rejection under 35 USC 101, Chapter 2106 of the MPEP clearly set forth that in order for an invention that is a 35 USC 101 Judicial Exception such as the data calculation and manipulation the claimed invention is directed to, to be statutory, the claimed invention must either transform an article or physical object to a different state or thing, or produce a useful, concrete and tangible result. In making a determination of whether an invention produce a useful, concrete and tangible result, the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather on whether the final result produced

by the claimed invention is useful, tangible and concrete. Thus, accelerating speed, reducing power consumption as now recited in the claims may although be improvements of the inventions, They are not a practical application as defined in the Guidelines that transforms an article or physical object to a different state or thing, or produce a useful, concrete and tangible result. Noting that the result produced by the claimed invention is still a mere number having a real world value, and thus is not a useful, concrete and tangible. Therefore, the amendment fails to overcome the rejection.

Regarding the rejection under rejected under 35 U.S.C. 103(a), it is respectfully submitted that “a carry-save adder” referred in the rejection is the combination of the two 3 to-2 carry-save adders that form a 4 to 2 carry-save adder in figure 5 of Wang et al and that correspond to the claimed “accumulator”. It should be noted that figure 5 is illustrated in word level as figure 2 of the present invention. The figure if illustrated in bit level would shows a plurality of bit slices as that of figure 5 of the present invention, and each bit slice that corresponding to a claimed “compressor” would clearly receive a multiple modulus (a multiple of N from MUXs), a partial product (a multiple of B from MUXs) , a corresponding current sum and a corresponding current carry (the feedback from the carry save adder), and producing a corresponding next sum and a corresponding next carry (the output from the carry save adder) as claimed.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. This application contains claims 1-7,42-50 and 56-61 drawn to an invention nonelected with traverse in the reply filed on 07/23/2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong D. Ngo whose telephone number is (571) 272-3731. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis, Jr. A. Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chuong D Ngo/
Primary Examiner, Art Unit 2193

06/06/2008